

What is claimed is:

1. A method for harvesting portions of an animal carcass, comprising:
 - (a) at a separation point on a first processing line, separating said animal carcass into a first portion and a second portion;
 - (b) transporting said first portion on a first support means toward a first harvesting point;
 - (c) transporting said second portion on a second support means toward a second harvesting point;
 - (d) correlating the first support means and the second support means such that the first portion and the second portion are positively identified as originating from said animal carcass;
 - (e) conducting an inspection of said second portion at an inspection point between said separation point and said second harvesting point to determine whether or not said second portion meets a predetermined standard;
 - (f) harvesting said second portion at the second harvesting point, unless it is determined that the second portion does not meet said predetermined standard; and
 - (g) harvesting said first portion at said first harvesting point unless one or more predetermined conditions exist, one of said conditions comprising a failure of the second portion to meet said predetermined standard as determined by said inspection.
2. The method according to claim 1, wherein said first portion and said second portion are transported toward said respective first and second harvesting points on separate processing lines.
3. The method according to claim 2, wherein said first portion is transported toward said first harvesting point on said first processing line and said second portion is transported toward said second harvesting point on a second processing line.
4. The method according to claim 3, wherein said first processing line and said second processing line are operated independently of one another.

5. The method according to claim 1 wherein, prior to separating the carcass into said first and second portions, the carcass is transported to said separation point on said first support means and said first portion remains on said first support means after separation from the second portion.
6. The method according to claim 5, wherein the animal carcass is at least partially supported on said first support means by said first portion prior to separation in step (a).
7. The method according to claim 5, further comprising transferring the second portion to said second support means after separation from said first portion in step (a).
8. The method according to claim 3 wherein, if it is determined by the inspection that the second portion does not meet said predetermined standard, the second portion is removed from the second processing line after passing said inspection point and before reaching the second harvesting point.
9. The method according to claim 8, further comprising the step of using detecting means to detect the presence of said second portion at a detection point on said second processing line past said inspection point, wherein detection of the second portion indicates that the second portion meets said predetermined standard and a failure to detect the second portion indicates that the second portion does not meet said predetermined standard.
10. The method according to claim 9 wherein, if the detection means fails to detect the second portion, a signal is sent to harvesting means located at the first harvesting point, causing the harvesting means not to harvest the first portion.
11. The method according to claim 7, wherein a plurality of detection means are provided to detect the presence of the second portion at a plurality of detection points on said second processing line.

12. The method according to claim 1, wherein another of said predetermined conditions comprises an inability to positively match said first portion and said second portion.

13. The method according to claim 1, wherein said animal carcass is a chicken carcass.

14. The method according to claim 13, wherein said first portion comprises a pair of chicken feet and said second portion comprises said carcass with said pair of feet removed.

15. The method according to claim 1, wherein said predetermined standard comprises a predetermined quality standard.

16. The method according to claim 14, wherein said first processing line comprises a kill line on which chickens are slaughtered, bled and defeathered prior to reaching said separation point, and wherein said second processing line comprises an evisceration line on which the chicken carcasses are eviscerated before reaching said inspection point.

17. An apparatus for harvesting portions of an animal carcass, comprising:

(a) transporting means for transporting said animal carcasses from a starting point to a separation point where the carcass is separated into a first portion and a second portion;

(b) first support means for supporting said first portion and moving said first portion from said separation point to a first harvesting point;

(c) harvesting means for harvesting said first portion at said first harvesting point;

(d) second support means for supporting said second portion and transporting said second portion from said separation point through at least one inspection area to a second harvesting point, wherein said second portion is inspected at said at least one inspection area to determine whether or not it meets said predetermined standard;

(e) correlation means for relating said first portion to said second portion such that said first portion and said second portion are positively identified as originating from said animal carcass;

(f) inspection data generating means for generating information relating to inspection results for said second portion; and

(g) control means for receiving one or more signals from said inspection data generating means and for controlling operation of said harvesting means, each of said signals indicating the existence of one or more predetermined conditions, one of which is a failure of the second portion to meet said predetermined standard, said control means controlling operation of said harvesting means to harvest said first portion only where none of said predetermined conditions exist.

18. The apparatus according to claim 17 which includes two continuous processing lines which are movable independently of one another, a first processing line in which said first support means are arranged in fixed order and a second processing line in which a plurality of said second support means are arranged in fixed order.

19. The apparatus according to claim 18, wherein said transporting means comprise said first support means and wherein said starting point, said separation point and said first harvesting point are located on said first processing line, with said separation point being located between said starting point and said first harvesting point, and said first harvesting point being located between said separation point and said starting point.

20. The apparatus according to claim 19, further comprising transfer means for transferring said second portion said separation point on said first processing line to a transfer point on said second processing line, and wherein a first plurality of said second support means are arranged in fixed order on said transfer means and a second plurality of said second support means are arranged in fixed order on said second processing line.

21. The apparatus according to claim 20, wherein said inspection data generating means includes a first sensor to detect the presence or absence of said second portion immediately past said transfer point on said second processing line.

22. The apparatus according to claim 21, wherein said at least one inspection area includes a first inspection area at which said second portion is removed from said second support means if it is determined that the second portion does not meet said predetermined standard, said first inspection area located immediately past said first sensor on said second processing line.

23. The apparatus according to claim 22, wherein said inspection data generating means includes a second sensor to detect the presence or absence of said second portion immediately past said first inspection area on said second processing line.

24. The apparatus according to claim 23, wherein said at least one inspection area further includes a second inspection area at which said second portion is removed from the second support means if it is determined that the second portion does not meet said predetermined standard, said second inspection area being located past said second sensor.

25. The apparatus according to claim 24, wherein said inspection data generating means includes a third sensor to detect the presence or absence of said second portion immediately past said second inspection area on said second processing line.

26. The apparatus according to claim 20, wherein said correlation means includes:
a first pair of sensors on the first processing line, one of which is positioned proximate the separation point and the other of which is positioned proximate the first harvesting point, said first pair of sensors being arranged to detect said first support means on said first processing line;

a second pair of sensors on the second processing line, one of which is positioned proximate the transfer point and the other of which is positioned at a point past the at least one inspection area, said second pair of sensors being arranged to detect said second support means on said second processing line; and

computing means for assigning a unique value to each of the first support means between the separation point and the first harvesting point and each of the second support means between the transfer point and the point past the at least one inspection area, and correlating a value of each said first support means with a value of each said second support means.

27. The apparatus according to claim 19, wherein said apparatus is for harvesting portions of a chicken carcass, said first processing line comprising a kill line on which chickens are slaughtered, bled and defeathered, and said second processing line comprising an evisceration line, and wherein said first support means and said second support means comprise shackles on said kill line and evisceration line, respectively.

28. The apparatus according to claim 27, further comprising evisceration means for removing internal organs from a body cavity of each of said chicken carcasses.

29. A method for harvesting chicken paws of edible quality from a chicken carcass, comprising:

(a) transporting said chicken carcass along a kill line to a separation point, said chicken carcass being supported by its feet in a kill line shackle;

(b) at said separation point, separating said feet from said carcass such that said feet remain attached to said kill line shackle;

(c) transferring said carcass, after separation from its feet, to an evisceration line by hanging said carcass on an evisceration line shackle;

(d) transporting said feet along said kill line toward a paw harvesting station;

(e) transporting said carcass along said evisceration line toward a carcass harvesting station;

(f) correlating the kill line shackle and the evisceration line shackle such that the feet are positively identified as having been separated from said chicken carcass;

(g) conducting an inspection of said carcass at an inspection point between said separation point and said carcass harvesting station to determine whether or not said carcass meets a predetermined quality standard;

(h) harvesting said carcass at the carcass harvesting station, unless it is determined that the carcass does not meet said predetermined quality standard; and

(i) harvesting said feet at said paw harvesting station unless one or more

predetermined conditions exist, one of said conditions comprising a failure of the carcass to meet said predetermined quality standard.

30. The method according to claim 29 wherein, if it is determined by the inspection that the carcass does not meet said predetermined quality standard, the carcass is removed from the evisceration line after passing said inspection point and before reaching the carcass harvesting station.

31. The method according to claim 30, further comprising the step of using sensors to detect the presence of said carcass at a detection point on the evisceration line past said inspection point, wherein detection of the carcass by the sensor indicates that the carcass meets said predetermined quality standard and a failure by the sensor to detect the carcass indicates that the carcass does not meet said predetermined quality standard.

32. The method according to claim 31 wherein, if the sensor fails to detect the carcass, a signal is sent to a paw cutter located at the paw harvesting station, causing the paw cutter not to cut the feet from the evisceration line shackle.

33. The method according to claim 32, wherein a plurality of sensors are provided to detect the presence of the carcass at a plurality of detection points on said evisceration line.

34. The method according to claim 29, further comprising evisceration of said carcasses prior to inspection of the carcass at said inspection point, said evisceration comprising opening a body cavity of said carcass and removing a viscera pack therefrom.

35. The method according to claim 34, wherein said inspection comprises an internal inspection of said body cavity.

36. The method according to claim 35, wherein said inspection further comprises and inspection of said viscera pack.

37. The method according to claim 35, further comprising an external inspection which is conducted prior to evisceration and after transfer of the carcass to the evisceration line.

38. The method according to claim 37 wherein, if it is determined by said external inspection that the carcass does not meet said predetermined quality standard, the carcass is removed from the evisceration line immediately after said external inspection.

39. The method according to claim 29, wherein said carcass is of edible quality if it is determined to meet said predetermined quality standard.

40. The method according to claim 29, wherein another of said predetermined conditions comprises an inability to positively match the feet to the carcass.

41. An apparatus for harvesting chicken paws of edible quality from a chicken carcass, comprising:

(a) a kill line having a plurality of kill line shackles for supporting said chicken carcass by its feet;

(b) first cutter means for separating said chicken carcass from its feet, said first cutter means being located at a separation point on said kill line;

(c) a paw harvesting cutter for removing said chicken paws from said kill line shackle, said paw harvesting cutter being located at a paw harvesting station situated on said kill line past said separation point;

(d) an evisceration line having a plurality of evisceration line shackles for supporting said carcass after removal of said feet;

(e) an automatic transfer machine for transferring said carcass from said separation point to said evisceration line shackle at a transfer point located on said evisceration line;

(f) an inspection area located on said evisceration line where said carcass is inspected to determine whether or not it is of edible quality;

(g) correlation means for relating said feet to said carcass such that said feet are positively identified as originating from said carcass;

(f) inspection data generating means for generating information relating to inspection results for said carcass; and

(g) control means for receiving one or more signals from said inspection data generating means and for controlling operation of said paw harvesting cutter, each of said signals indicating the existence of one or more predetermined conditions, one of which is a failure of the carcass to meet said edible quality standard, said control means controlling operation of said paw harvesting cutter to harvest said paws only where none of said predetermined conditions exist.

42. The apparatus of claim 41, wherein said kill line shackles are arranged in fixed order on said kill line and said evisceration line shackles are arranged in fixed order on said evisceration line.

43. The apparatus of claim 41, wherein said inspection data generating means includes a first sensor to detect the presence or absence of said carcass immediately past said transfer point.

44. The apparatus of claim 43, wherein said inspection area comprises a pre-inspection area where an external inspection of said carcass is conducted and at which said carcass is removed from said evisceration line shackle if it is determined by said external inspection that said carcass is not of edible quality, said pre-inspection area being located immediately past said first sensor on said evisceration line.

45. The apparatus of claim 44, wherein said inspection data generating means further comprises a second sensor to detect the presence or absence of said carcass immediately past said pre-inspection area.

46. The apparatus of claim 45, further comprising evisceration means for removing a viscera pack from an internal cavity of the carcass, the evisceration means being located past the second sensor.

47. The apparatus of claim 46, further comprising a final inspection area at which an internal examination of the internal cavity of the carcass is conducted and at which the carcass is removed from the evisceration line shackle if it is determined that the

carcass is not of edible quality, said final inspection area being located past said evisceration means.

48. The apparatus of claim 47, wherein said inspection data generating means further comprises a third sensor to detect the presence or absence of said carcass immediately past said final inspection area on said evisceration line.

49. The apparatus of claim 41, wherein said correlation means includes:
a first pair of sensors on the kill line, one of which is positioned proximate the separation point and the other of which is positioned proximate the paw harvesting station, said first pair of sensors being arranged to detect said kill line shackles;

a second pair of sensors on the evisceration line, one of which is positioned proximate the transfer point and the other of which is positioned at a point past the inspection area, said second pair of sensors being arranged to detect said evisceration line shackles; and

computing means for assigning a unique value to each of the kill line shackles between the first pair of sensors and for assigning a unique value to each of the evisceration line shackles between the second pair of sensors, and for correlating a value of each said kill line shackle with a value of each said evisceration line shackle.

50. The apparatus of claim 41, wherein the kill line is of a length sufficient that the kill line shackle carrying the feet reaches the paw harvesting station only after it is determined whether or not the carcass is of edible quality.